School Shop

vol. VI no. 4
DECEMBER, 1946

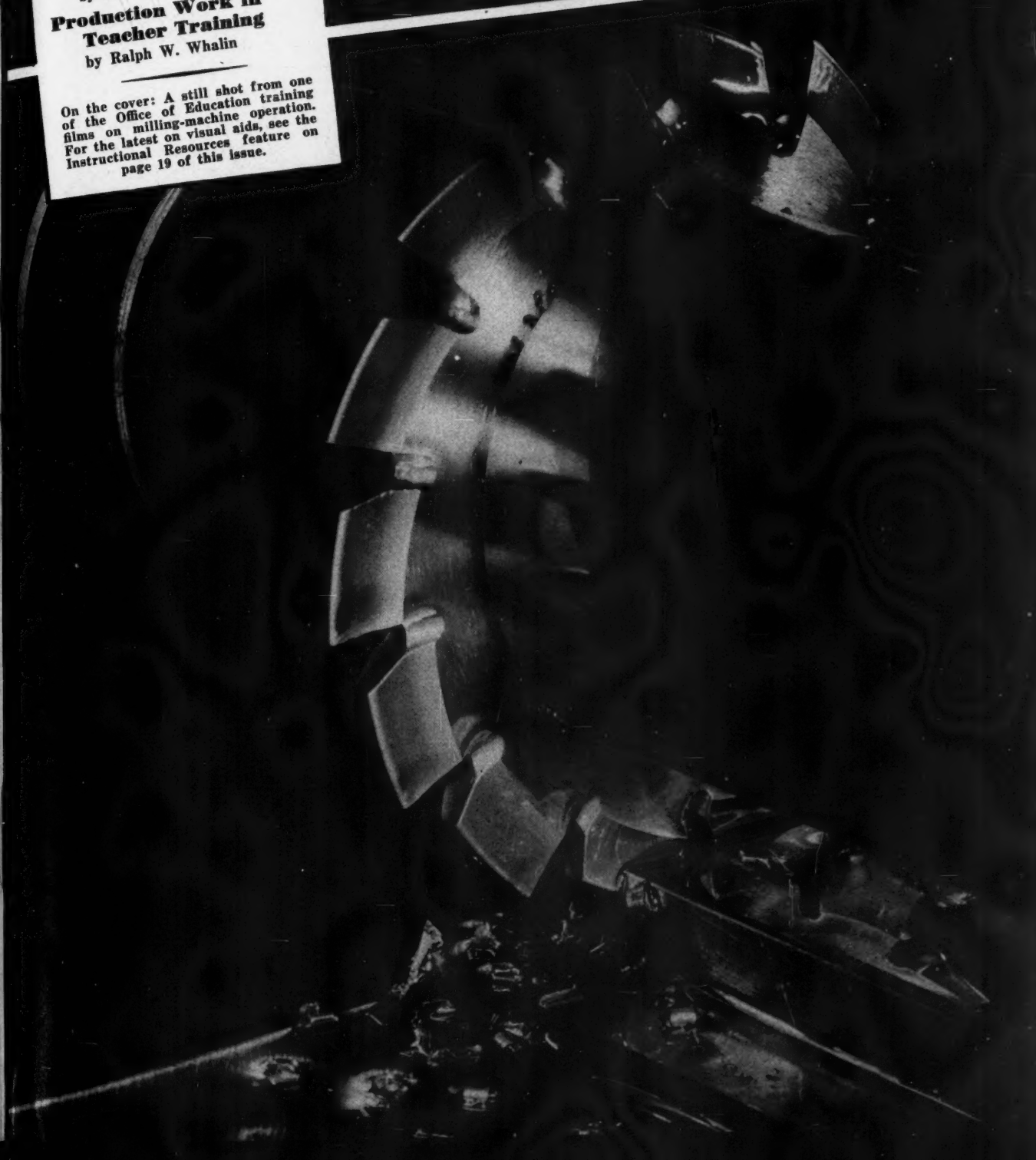
We Must Join Forces
by Ralph C. Wenrich

All-Welded Drying Rack
by Harry Kerwin

Forged Letter Opener
by Howard W. Broere

Production Work in Teacher Training
by Ralph W. Whalin

On the cover: A still shot from one of the Office of Education training films on milling-machine operation. For the latest on visual aids, see the Instructional Resources feature on page 19 of this issue.



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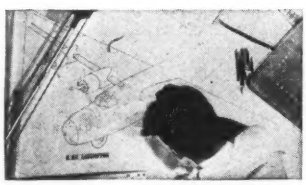

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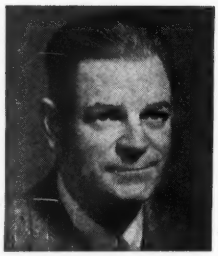

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School Shop

FOR INDUSTRIAL EDUCATION TEACHERS

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School Shop TALK

COMMENTS ON ISSUES FACING INDUSTRIAL EDUCATION

Where Is Our Leadership?

An Editorial by Roy G. Fales, New York State Supervisor of Industrial Arts

INDUSTRIAL-ARTS work in the public schools is improving and growing. Shops are larger, greater in number, are located in a better position in school buildings, and include many new types of work. Pupils and teachers are returning from war activities to the schools. The factories are employing fewer minors and the draft for military service is less pressing. Pupils may now look forward to graduation from high school and college without interruption. The war trends are reversed and the rising curve of industrial-arts enrolment, new shops, and increased number of teachers will soon be in line with the trend of the last 75 years.

Yet all is not well with the profession. Industrial-arts offers many children their only opportunity to become acquainted with the tools, materials, processes, products, and workers of industry. It presents a large part of our modern material culture to thousands of school children. However, there are thousands of school pupils who will leave school without an adequate general education along industrial lines because the schools which they attend do not have shops. The public schools of the country will not meet their full obligation to pupils until industrial-arts courses are made available to *all* pupils.

Cursory examination of state plans for industrial arts and curriculums offered by teachers colleges leaves the reader with the conviction that there is no common understanding of the nature and purpose of industrial-arts objectives and practice. Many states do not even recognize industrial-arts work. Teachers colleges vary widely in the number and kinds of shopwork taught.

We must develop a sound educational foundation and encourage the teaching of important types of work not now taught. Instructors cannot continue to teach only the activities which they like and nothing else. The course content should be based on a common knowledge of industry and experience with the tools and materials of all major industries which feed products into our environment. Industrial-arts work has a distinctive content and methodology which demands increased recognition, study, and development.

Teachers of industrial arts often work alone in different school buildings or in small groups in large schools. They seldom work in large units except in the cities. Our opportunity for collective action on the professional problems that face us is limited. Even the teachers in cities, only a few miles apart, find it difficult to cooperate for the common good unless there is an individual or a group to bring them together and help them with common problems. Objectives and practices differ widely between states. This is not true of some other school subjects. It should not be true of industrial-arts work.

The teachers in a large number of our cities and most small schools work without supervision except that provided by an academic principal who has been trained in subjects other than industrial arts. State offices in less than 10 of the 48 states provide for any coordination or supervision.

Teachers who work alone and never have an opportunity to meet with others having the same problems can do little to improve their own working conditions and almost nothing to clarify professional problems. They need stimulus, the exchange of ideas and the weight of group thinking which grow out of good leadership to aid in the solution of common problems concerning salary, curriculums, teacher education, shop size, departmental organization, new methods of teaching, pupil selection and enrolment, and financial support for materials, power, light, and equipment. These problems are difficult to solve for lack of information, research data, and leadership. In many schools the teacher stands alone, unable to find the professional and financial support which is necessary for good organization and teaching.

Industrial arts cannot attain its greatest influence without stronger leadership. To be sure we have many strong leaders including E. E. Ericson, Arthur B. Mays, Homer Smith, Verne Fryklund, William Bawden, Maris Proffitt, Louis V. Newkirk, William E. Warner, Fred Schmidt, R. A. Campbell, Frank Moore, and others. These men have all exerted a profound influence on the development of industrial-arts work, but we still lack the benefit of strong *coordinated* national, state, and local leadership. Individual leaders alone cannot provide the strength and aggressive leadership which is called for today. We still are seeking a group of prominent authorities in this educational area around whom we can muster our forces. We need to present a united front backed with carefully prepared data. We need an educational campaign for educators and taxpayers. We need aggressive group leadership strong enough to unite the entire industrial-arts teaching body that we may all strive, fight, and work for better education for boys and girls.

Leadership of an adequate nature is possible. It can be developed if the demand is sufficiently strong. A group of this kind can be established through one of the present professional organizations, by the U. S. Office of Education, or through other independent means. It is essential that we find a nucleus for leadership which exhibits strong interest in industrial-arts people and their organization to meet the needs of American youth. It is not enough that we have city supervisors. Teachers in small schools, city teachers, and supervisors, all need constructive assistance. State and national leadership is necessary. Until that leadership is provided we lack strength and support for a strong program which will coordinate and unify the thinking and practice of public-school teachers, teacher-preparing institutions, and the boards of education which provide the necessary facilities for this work. *Are industrial-arts people big enough to meet the challenge? Will some national organization recognize the opportunity and come to our assistance?*

Amen!

Mr. Fales' editorial expresses a crying need of the industrial-arts profession. In comparison with such subject areas as English, social studies, modern languages, to name only a few, industrial arts does not have the national united leadership required to promote and protect the profession. Readers of SCHOOL SHOP are invited to express their viewpoints on this urgent matter.

Your Editor

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We Must Join Forces

A Broader Concept of Vocational Education

BY ***Ralph C. Wenrich***

The period when the concept of dualism in education was necessary for the development of vocational education in the schools seems to be past. The author, who is Assistant Superintendent of Public Instruction for Michigan in Charge of Vocational Education, advocates a more comprehensive approach to the problem of providing the best education possible for the youth of the nation.

VOCATIONAL and general educators must join forces, if we are interested in providing for youth the best possible preparation for occupational life. We must encourage the cooperation of vocational and general education teachers in developing broad policies and educational plans for the schools to insure a balance between these two aspects of the education of the student.

A program must be planned cooperatively which will provide equally as well for those who are not planning to enter the professions or the highly skilled occupations as we have provided for those who are. *Equal* educational opportunity does not mean *identical* opportunity.

The original purpose of American high schools to prepare youth for occupational life was, for a long time, limited to those entering the professions. This was due, in part, to the fact that only those who desired and were capable of getting a college education found it necessary to have a high-school diploma. Since the turn of the century, our high-school population has changed. In 1940 over 70 percent of youth between the ages of 14 and 18 were in school. We now have "all the children of all the people" in our secondary schools.

With the passage of the Smith-Hughes Act in 1917, a national movement was started to provide for secondary-school youth some type of preparation for occupational life other than the professions. This federally supported program, later supplemented by the George-Deen and George-Barden Acts, provides for the vocational training needs of a limited number of high-school students. In 1944-45 Michigan had 213,901 students enrolled in grades IX through XII. Less than 20 percent of this group attended Smith-Hughes and George-Deen vocational classes.

Adequate Vocational Preparation

What constitutes adequate preparation for occupational life? Reasonable proficiency in the skills of the occupation is a necessity, of course. However, in addition to skilled hands, the successful worker must have other characteristics:

1. He should have acquired the basic tool skills of learning. For example, he must be able to communicate effectively, which includes the ability to read, write, and speak. Also, he must have a certain degree of ability in the use of numbers. These are prerequisites for most occupations.
2. He should have good health and a well-developed physical body.
3. He should have a well integrated and stable personality.
4. He should have the ability to analyze and deal with a problem realistically.
5. He should have the capacity to work effectively with others.
6. He should have the ability to function as a member of the social units with which he may be associated.
7. He should have sufficient civic competence to live in a democratic society.

Education as Well as Training

These are only some of the elements of preparation for occupational life which influence the success of an individual in his vocation. If we are to give individuals this type of preparation, it is clearly seen that we must educate as well as train.

Education might be considered the enlargement and enrichment of the mind. Education gives the mind a cubical relation—breadth, height, and depth; education gives the mind vision and power.

Training is the process of making the mind a more effective tool for doing specific work. Training is like grinding the mind to a keen cutting edge. The ideal should be to educate in the broad sense and train to perform a specific task.

When Do Each Begin?

When should general education end and specific training begin? No arbitrary division of these two phases of development can be made. However, it can be said that the earlier period of a child's life should be predominantly general, followed by a period of training which would place the major emphasis on vocational competence. The length of time spent in each of these two phases of the child's development is a variable factor, depending on the ability of the individual and his occupational objective. For example, one who is preparing for the medical profession does not complete that phase which places the major emphasis on general education until after he leaves high school. His premedical training might be considered as general education and medical school as largely vocational training. Another example is the young man who may have a smaller degree of scholastic ability but has other abilities which indicate that he might well prepare for an occupation requiring a lesser degree of technical knowledge and skill. This individual may not be capable of successfully completing as extensive a period of general education as the student preparing for medicine; neither does he need the same broad foundation. Both need to have their education capped by specific vocational training. In the former example, these vocational skills are more complex and are taught only after a long period of general education. In the latter case, the general education is limited, due to the capacity of the individual and the requirements of his vocational objective.

Cooperation Is Essential

Consideration of the elements contributing to the preparation for occupational life must result in the conclusion that this preparation can be provided only through the cooperation of those interested in both general and vocational education.

Grayson N. Kefauver in the *42nd Yearbook of the National Society for the Study of Education* emphasizes the need for cooperation: "Traditionally, vocational education and general education have at times been in competition with each other. The conflict between vocational and general education has been associated with an unfortunate dualism between mind and matter, or between mental and manual. Actually, students can be taught—and are being taught—to think in vocational classes. While some vocational training can be criticized for its almost exclusive emphasis on skills, a general indictment is most certainly false. The best vocational training involves a combination of the mental and the manual, and the two types of

(*Continued on page* 10)

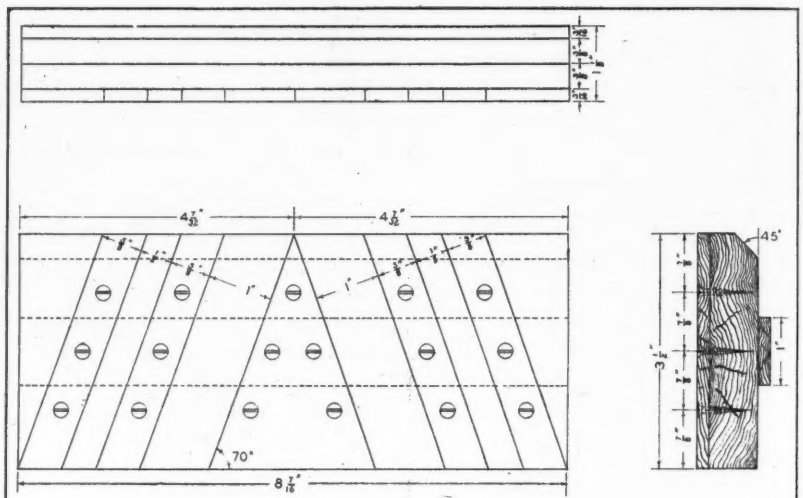
Skew Chisel Sharpening Holder

BY *A. R. Cade*, HIGH SCHOOL, SPRINGFIELD, MO.

THE skew chisel has always been a difficult tool to sharpen because of the necessity of cutting the point at the proper angle and at the same time maintaining the proper bevel. A great deal of skill is required to do a fair job of sharpening without a tool holder.

With the tool holder described here, an inexperienced student can produce a good sharpening job. The tool holder is designed to accommodate ½" and 1" tools although it can be adapted to fit whatever sizes the instructor wishes. The holder is used in place of the plane iron tool holder on the ways of the tool grinder.

The cutting edge of the chisel should form a 70° angle and the length of the bevel should be about twice the thickness of the chisel. A 6" wheel is the proper size for grinding.



SKEW CHISEL SHARPENING HOLDER

All-Welded Drying Rack

BY *Harry Kerwin*

Head, Shop Department, Public Schools, San Luis Obispo, Calif.

THE welding classes in the San Luis Obispo High School were requested to construct a portable, lightweight drying rack on which to suspend wrestling mats. The dimensions and specifications were furnished by the maintenance superintendent of the school. The project was planned so as to have the fullest amount of training value for the students.

As would be true in standard industrial procedure, two boys were assigned to make a scale drawing of the project. One student procured the materials and three students who were practicing bronze welding and brazing were assigned to the job of construction.

The materials of construction consisted of 1" galvanized pipe, 1/16" mild steel plate, 1½" galvanized pipe, and heavy-duty, rubber-tired, free-wheeling casters.

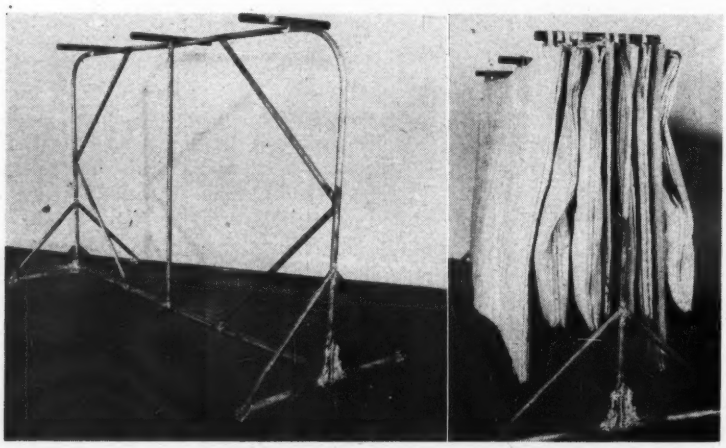
Following the drawings, the boys made the necessary bends and cut the pipe to the correct lengths. Valuable acetylene cutting experience was gained in making smooth fits on the various joints.

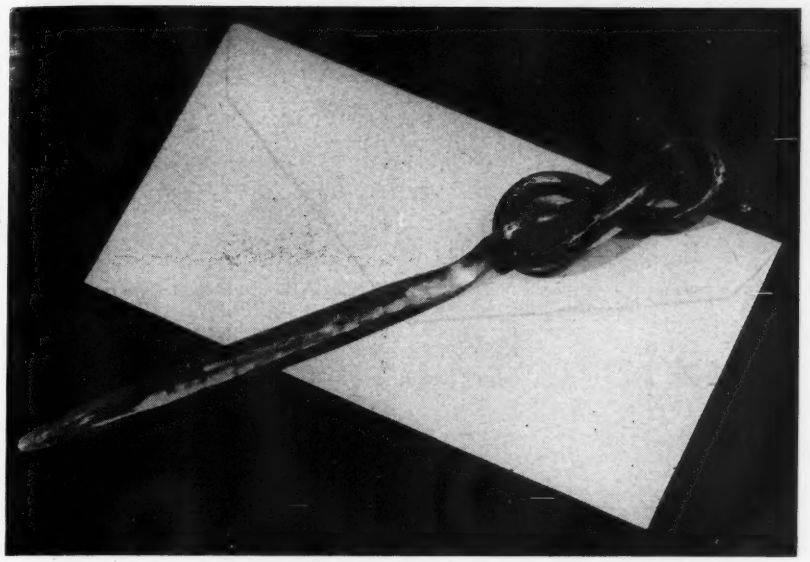
While under ordinary job-shop procedure this project would have been arc welded, brazing was selected as the means of fabrication because of the learning area of the students in the welding class. This project afforded an interesting application of the technics in practice at that time.

The entire rack was fitted and tack-welded together before any joint was welded. The continuity of welding to prevent distortion presented a valuable lesson in the control of expansion and contraction while welding.

All welds were made in position with 3/16" 25m bronze welding rod with a good medium heat brazing flux. All open ends of the pipe were welded closed for better appearance.

Two students can lift the rack off the floor with ease and any average-sized girl can, with one hand, whirl the rack loaded with eight wrestling mats in a circle in its own length.





Forged Letter Opener

BY *Howard W. Broere*

Hand forging is still an important part of the industrial picture, yet many industrial-arts departments do little with it. Here is a simple but well designed project which is within the reach of elementary students. Howard W. Broere is a student at the Oswego, N. Y., State Teachers College.

TESTED INSTRUCTIONAL 33 PROJECT

IN many school shops today forging is limited to the fabrication of cold chisels and wood-turning tools. The village blacksmith made these things, but he also made more artistic items for the home such as door knockers, andirons, spits, and cranes. Forging should be taught from the decorative as well as from the utilitarian angle and it was for this purpose that the letter opener was designed. Moreover, forging is an important industrial process and students should learn something about it in an industrial-arts course.

The forged letter opener may seem to be too ambitious an elementary project, yet a first-year high-school student can make it after a little study. The procedure used in making this project is as follows:

Lay-out.—A 17″ piece of ¼″ round iron is used. Scribe a mark 6″ from one end from which to make the blade. See the scriber marks on the drawing. The first part of the knot is 3½″ long. Lay out a 4″ length for the second part which has two bends in it. Lay out a 3½″ length for the end of the knot. The heat of the forging will probably make the lay-out marks almost invisible so chalk can be used to make them show up better.

Drawing out the blade.—The 6″ section for the blade is heated in the forge and drawn out on the sides to form a very narrow ellipse. Work from the point up through the length, using glancing blows on the anvil. This process will tend to draw the metal, making it thinner on the edges. Turn the blade over several times during the operation. Never keep hammering after the metal has lost its heat as this will set up strains in the metal which will cause it to crack. A good letter opener has a thin blade and is fairly wide so keep the ellipse thin. In finishing the drawing process, remove as many of the hammer marks as possible because they all must be removed later in the grinding or draw filing.

Partially finishing the blade.—It is advantageous to partially finish the blade at this time. Grinding will help in removing most of the spots but finishing is done by draw filing. Protect the metal from the vise jaws with sheetmetal when filing. Draw file the blade smooth and elliptical. Of course, the heat of forging will discolor the blade and may melt its thin edges. Care should be exercised and the final finishing left until after the knot is completed.

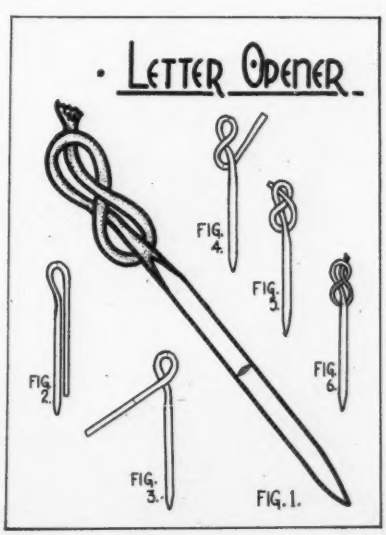
Making the first bends.—The horn of the anvil and a piece of iron rod ¾″ in diameter are used to bend the first part of the knot. Bend approximately a 15° angle over the horn of the anvil half way between the 3½″ layout mark and the partially finished blade as shown in Figure 2. The stock will have to be reheated before it can be worked again. Secure the piece of ¾″ rod in a vise and bend directly over the 3½″ mark as shown in Figure 2. The bend is continued *over* the blade as shown in Figure 3. Using the ¾″ rod to bend around saves time and results in a more symmetrical curve than can be made with a free bend.

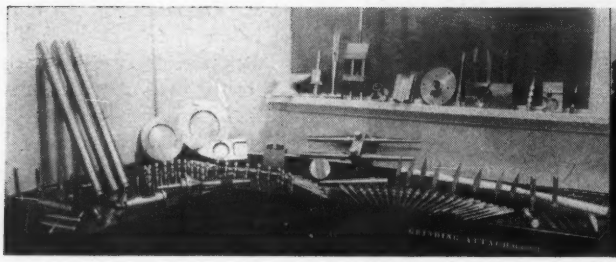
Making the next bend.—Reheat the stock and use the iron rod to form the next circular bend which is made to center over the 4″ lay-out mark. Figure 4 shows that the stock goes *under* the blade.

Finishing or pulling the knot.—This is the most difficult operation in making the knife. The hot stock is bent so that it will go *down* through the eye on the top of the knot as shown in Figure 5. Hammer and anvil are used for this operation. It must be remembered that hot metal will bend easier than cold. The end is then straightened out and pulled as in Figure 6 to conform to the design and to tighten the knot. Flaring the end gives the design a finished look and adds a decorative note. The blade will lie flat if a slight bend is made where the blade goes into the knot as shown in the photograph.

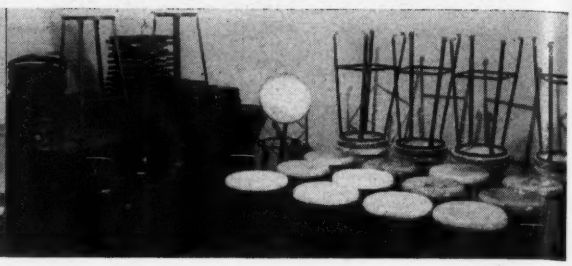
Completing the letter opener.—After the knot is finished, the blade can be completed by draw filing. Emery cloth can be used to remove any marks left by the filing. A lustrous sheen can be made by finishing with crocus cloth. Paint the knot black and when dry accentuate the highlights by rubbing lightly with fine emery cloth. Like all good letter openers, the blade must be thin as well as sharp.

Other designs can be used instead of the figure-eight knot, using this same construction technic.





Tools and equipment made in the machine shop.



Laboratory furniture made by the production department.

Production Work in Teacher Training

BY *Ralph W. Whalin*

A serious criticism of teacher training is the lack of opportunity offered for developing manipulative skills. Here is how one institution solves the problem. Ralph W. Whalin is Chairman of the Industrial-Arts Department, Eastern Kentucky State Teachers College, Richmond.

THE prospective teacher of industrial arts should have broad knowledge and much skill. Yet the latter is difficult to achieve in the average teacher-training institution because of time limitations. Many courses outside of the industrial-arts department are important and necessary for the student. Extra-curricular and outside interests beckon him. However, it is not beyond the realm of possibility to develop in students a rather high degree of manipulative skill.

It is becoming increasingly certain that a teacher cannot be trained in several divisions of an industrial-arts department under a 24 or 30 semester-hour curriculum. Many institutions have long ago accepted this and now require from 40 to 50 semester hours in the major field. None of the common academic or professional requirements need be sacrificed to put this program into practice, only secondary subjects.

Although this is a rather large number of hours to acquire in one field, it is still often difficult to develop a very high degree of skill when this time is spread over 10 or 12 trades. A relatively short period may be devoted to a single division of the department.

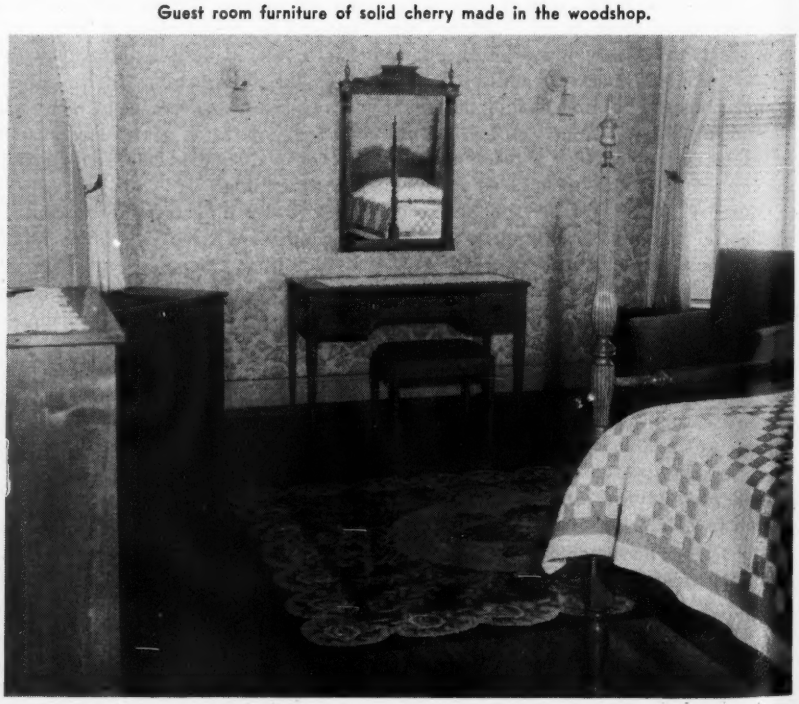
In our institution we have recognized this and are attempting to supplement our students' training with some form of production work. Credit is not given, but the students are paid by the hour. This part of our training program usually operates from three to four hours each day. It is under the direction of a faculty member and student foreman.

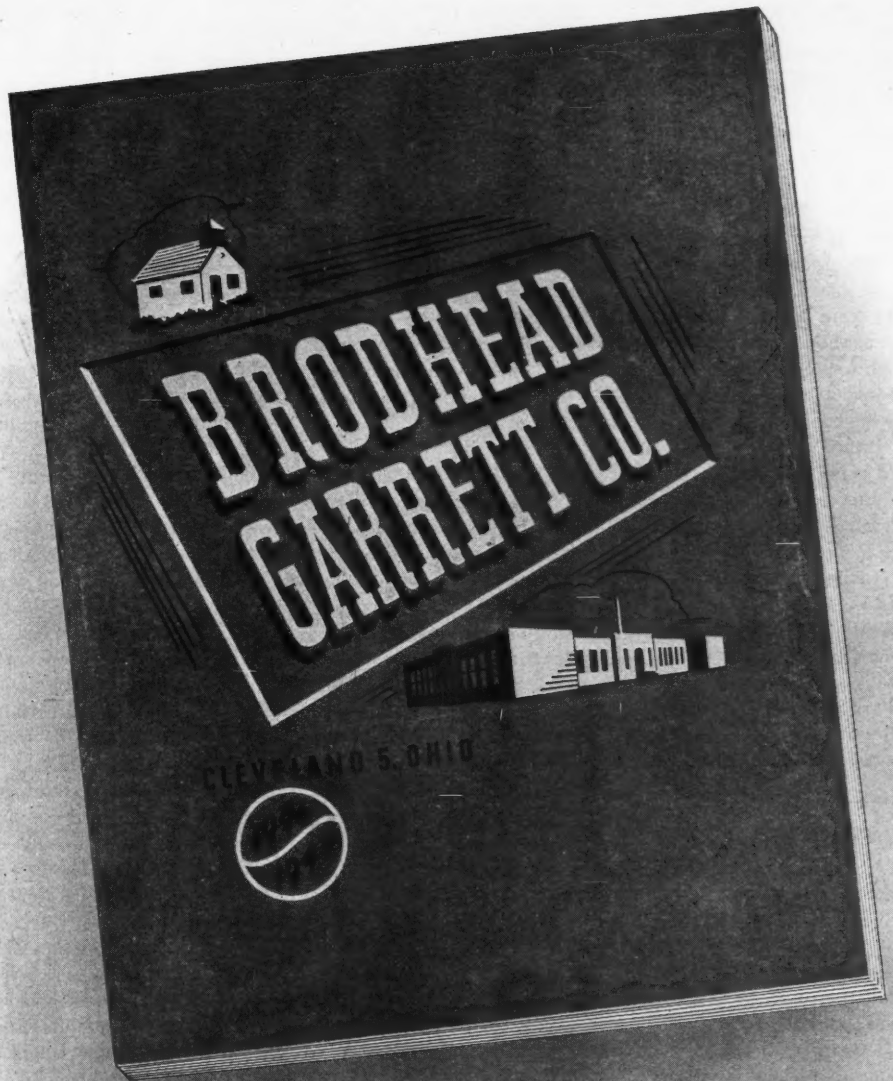
The program consists of building laboratory furniture and office equipment; machine-shop, welding, sheet-metal maintenance work; and construction work for the college. Where there is a rather large college plant, the department can be kept constantly busy. In our case, jobs accumulate for months ahead. All of the work is confined to the college campus; none is accepted that might put us in competition with private concerns.

Most repair work is done by the regular college maintenance department, although some comes into our department. A majority of our students receive what

Student-made cherry mirror and chest.

Guest room furniture of solid cherry made in the woodshop.





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is equal to two or three years of actual trade experience while in training.

One of the most valuable and interesting recent jobs was the furnishing of a guest room in the home of the college president. All this furniture was constructed entirely by the students in the industrial-arts department. It is of period design and constructed of solid native cherry. The upholstering was done by students taking a weaving and upholstering course.

It would be difficult to train teachers in this manner in a general shop. Ours is done in four general unit shops. We have, in addition, a composite general shop for teaching classes in general shop and as a laboratory for future teachers.

A program of this kind is not easy for faculty or students. Neither seem ever to find time to get everything done, but it is encouraging to see students given an opportunity at least to become fair craftsmen.

Whenever we cease to prepare industrial-arts teachers without a rather high degree of skill in several divisions of our field or without some mark of a craftsman, we might as well put away our tools and seek some other vocation.

Join Forces . . . *from page 5*

work should not be considered in opposition to each other."

Increasingly men have come to see that these two aspects of the educational program are not in conflict, but, instead, that they supplement and support each other. It is a mistake to assume that a vocational-education program furnishes the only training bearing on the performance of an individual in an occupation. In fact, the training he has received in his general education may at times be as important, or even more important, in determining his occupational success or failure as the training which he secured in the vocational courses.

Differences Understandable

In view of the differences in background and preparation, it is readily understandable that general education teachers and vocational teachers have had difficulty in appreciating each other and in achieving effective working relationships. Vocational teachers were selected because of their skill in their particular occupations. This procedure, however, resulted in the selection of teachers who had very little academic education. It was difficult for them to fit into a high-school faculty made up of college graduates. On the other hand, the teachers in general education had frequently spent their entire lives in school, either as students or teachers, and had little or no experience and little understanding of the work in occupations other than teaching. During the past 30 years, however, vocational-education teachers have made an effort to get more general education, and general education teachers have had experiences in the world of work. This broadening of the teachers in both groups should have eliminated much of the conflict which previously existed and should establish a better basis for cooperation of the entire staff in planning the total educational program for the youth of a community.

The foregoing discussion should not be interpreted to mean that vocational education should become merged with general education. Courses and activities designed to prepare students for specific occupations are vocational in nature and should not lose their identity in the total education program. Vocational courses in which the skills of the occupation are taught must continue on the same high standards which have been maintained for many years. The fact that educational objectives other than the vocational might be served by these courses does not deny their vocational purpose and nature.

The Basis for a Sound Program

In order to assure adequate preparation for occupational life for all youth in our secondary schools, the following must be accomplished:

1. Educators must recognize that our present secondary-school population represents a cross-section of society, including those who need to be prepared for something other than the professions and the skilled occupations. An awareness of the problem and a desire to find the solution is the first step.

2. Vocational and general educators must recognize the contribution which each can make in the total education of youth. They must work together in planning a program to meet the needs of all boys and girls. A common education capped by training in specific occupational skills should be made available to all pupils.

3. General education can be made more functional by the application of otherwise abstract subjects to the field of occupational interest. The study of science, for example, is likely to be more meaningful if applied and related to the study of soil fertility, beef steer feeding, or dairy herd improvement. Mathematics can be made more purposeful if related to training in farm accounting. The fact that a pupil's occupational objective can be used as motivation for general education is an important consideration.

4. A comprehensive guidance program must be made an integral part of the secondary school. Youth must be given the opportunity to know themselves, their special abilities, aptitudes, and interests in relation to the requirements of occupations.

5. A sound program of preparation for occupational life requires a study of occupations for which training is needed in the community. We cannot plan a program on the basis of what we *think* to be the needs of the community. We must know these needs. A survey should be made in each community in which comprehensive statistical data are secured concerning all fields of employment, the occupations included in each, as well as the number of workers employed and the kind of training they need. Following this survey, a decision must be made as to where and how the necessary training can be done most efficiently. Training for certain occupations can be done in the school. For other occupations, it might better be done on-the-job. The training for many occupations can be accomplished most effectively through a cooperative program.

6. Vocational preparatory training must be made available in all fields and on all levels. For smaller schools this may best be accomplished through the diversified occupations program where industry or business cooperates with the school. The pupil spends half of the day in school and the other half on the job. Larger units of administration will also facilitate adequate training in this area.

7. Our experience during the past five years has demonstrated the value of advisory committees in the development of war-production training programs. We must continue to develop the cooperative attitude and participation of agricultural, industrial, business, labor, and other groups.

From Washington. *from page 24*

gether with others of the profession will benefit by the results of this recognition.

During the last three months nearly every major newspaper, magazine, and radio station has urged that teacher salaries be raised. Many of the magazines have done this not just once; they have repeated their appeals to the public in successive issues. The chambers of commerce, labor unions, women's clubs, and veterans' organizations have also pledged their support to the teacher in his fight for an equitable salary.

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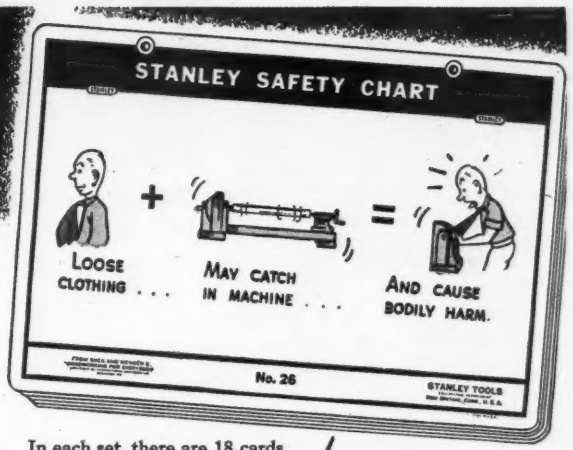

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ONE OF THE BIG EVENTS of the year for us is the annual convention of the American Vocational Association. This year it is being held at St. Louis, Missouri, December 4-7. The program looks particularly attractive, and we look forward to seeing you there at Booth 51.

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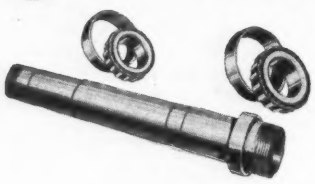
A Unique Repair Club

The Robert Poole Junior High School has a repair club which is different. The shopwork students hold weekly meetings after school during which they discuss and organize plans for carrying on repair work for the school. Committees are formed for the purpose of canvassing teachers in the various sections of the building. On Monday mornings all teachers are contacted and they report the repair jobs which are needed. In a subsequent meeting these jobs are discussed, planned, and given priorities. The jobs are done during the shop classes provided that proper recognition is given to the educational value of each and that each fits into the course of study. Excellent results are reported, both as to the quality of work done and the learning that takes place. The industrial-arts teachers are Isadore Friedman and Miss Alice Farrell. — *Robert Poole Junior High School, Baltimore, Md.*

3 announcements in 1



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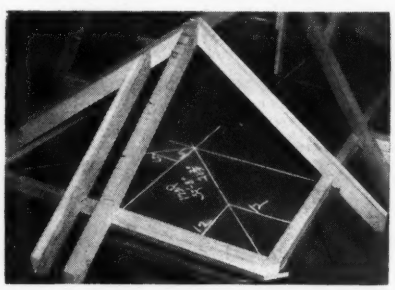
Roof Framing Teaching Device

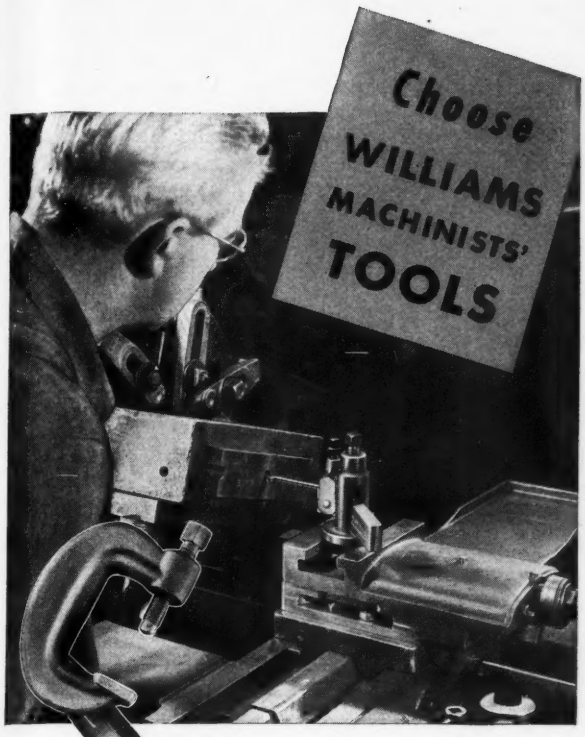
To teach roof framing to carpentry students, construct a flat table-like surface from three-ply paneling about 5′ x 10′. Fasten on a set of legs to make it table height. Around the rim of the panel board nail a 1 x 2 to represent the top plate of a building. Paint the surface with blackboard paint. The model is now a flat blackboard on which an actual roof may be constructed by using 2 x 3 or 2 x 4 rafters. The plan lay-out of the roof is made directly on the blackboard as shown in the photograph.



This device is useful to the instructor in demonstrating rafter shapes and cuts. Good practice is to have all students lay out various rafters and a few cut their rafter patterns. In this way the class can actually construct a model roof which is large enough for each student to see the relationship between all of the rafters and also gives each one actual lay-out experience. Colored chalk can be used on the blackboard surface to demonstrate the various intersecting cuts.—*J. Douglas Wilson, Coordinator, Building Trades Department, Frank Wiggins Trade School, Los Angeles, California.*

Lubricating Nails

Oftentimes in general woodworking or cabinetmaking, it is necessary to use care in driving nails, especially when working with hardwoods. I have drilled a hole in the handle of a hammer and filled the hole with soap. If the nail is first inserted in the soap before being driven, it will drive much easier.—*James L. McGraw, Portland, Oregon.*



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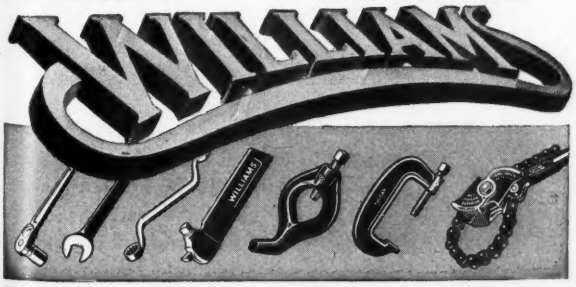

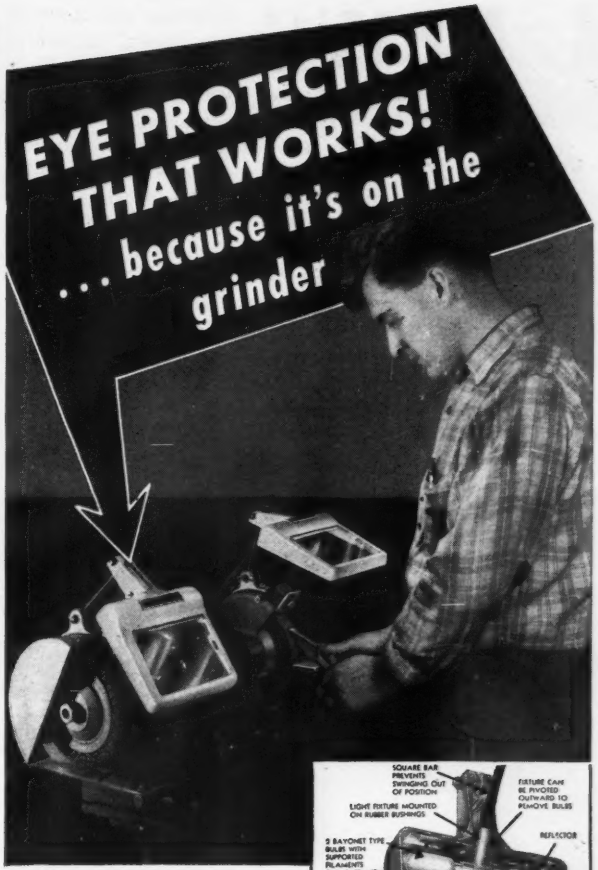

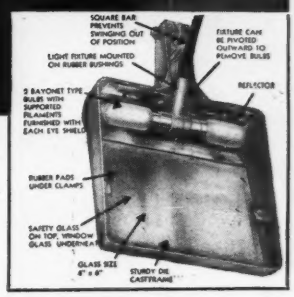
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NEWS

What's Doing in the Field of INDUSTRIAL EDUCATION

AVA Convention Program

HIGHLIGHTS of the industrial-arts and industrial-education section meetings of the convention of the American Vocational Association in St. Louis December 4-7 have been announced as follows by Executive Secretary L. H. Dennis.

The Industrial Education Section will hold its first meeting Wednesday morning December 3 with committee reports given on content of professional courses, in-service and alertness courses, evaluative criteria, and development of instructional materials. The afternoon will be devoted to a discussion of apprentice education by one group while another will discuss veteran education. Thursday morning will be left open for school visitation while the afternoon session will consist of a discussion of the topic "Industrial Education from Now On" with J. C. Woodin, Wichita, Kansas; Fred Karches, Rice-Stix Co., St. Louis; J. R. Strobel, State Director of Ohio; and a speaker from labor participating. A Friday afternoon session will be devoted to supervisory training with addresses by H. G. Widdowson of the University of Minnesota, Walter Arnold of the Mack Truck Co., E. S. Baird of Iowa State College, and Harry H. Coxen of Kansas City, Mo. A panel discussion will be held with panel members from industry. Another Friday afternoon session will be devoted to cooperative occupational training programs. A session on the privately endowed vocational school will be held on Friday afternoon with the training of veterans as the discussion topic. The automotive trades section will meet Friday at noon at the McQay Norris Mfg. Co. piston ring plant for a tour. The printing education group will meet Saturday morning. The building-trades group will also convene Saturday morning for a discussion of apprentice and carpentry training.

The Industrial-Arts Section will hold its first meeting on Wednesday afternoon, December 4, for a discussion of the revision of the booklet, *Standards of Attainment.* Participating will be Homer J. Smith of the University of Minnesota, C. A. Bowman of The Stout Institute, W. T. Bawden of Pittsburg State Teachers College, E. E. Ericson of Santa Barbara College, G. F. Weber of South Bend, Ind., and A. B. Mays of the University of Illinois. Thursday morning is reserved for school and industrial visitation. In the afternoon the group will discuss "Selection, Preparation, and Use of Instructional Materials in Industrial-Arts Teaching." "Promoting Industrial Arts" will be the theme of the Friday afternoon session with the following topics discussed: "Recruiting the Best to Teach Industrial Arts" by C. K. Lush of Minneapolis; "An Effective Program for Training Industrial-Arts Teachers" by C. Groneman of Texas A & M College; "Publicizing Industrial Arts" by L. L. Carver of Iowa State College; "Prophylaxis Against Growing Stale Industrial Arts" by K. F. Perry of Colorado State College of Education; and a committee report on industrial-arts policies and planning. Saturday morning will be devoted to an exhibit and demonstration of the use of aluminum and Plexiglas in industrial arts by representatives of the Aluminum Company of America and of Rohm and Haas Co.

On Monday and Tuesday, December 2 and 3, preceding the convention proper, meetings have been scheduled by the National Council of Local Administrators of Vocational Education and Practical Arts, the National Association of Industrial Teacher Trainers, and the National Association of State Supervisors of Trade and Industrial Education.

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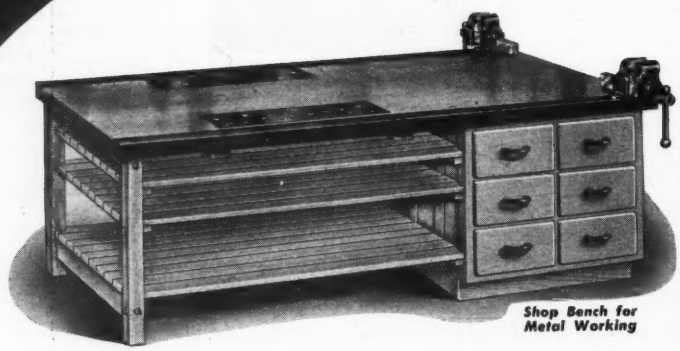
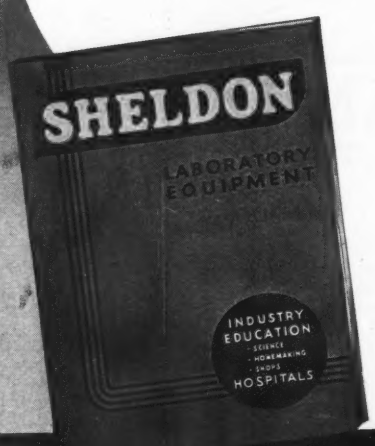


Shop Bench for Metal Working



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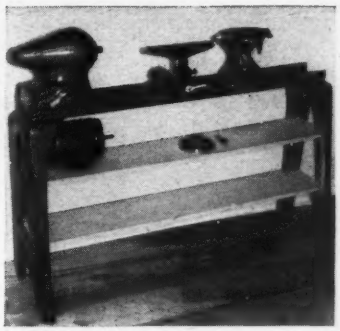

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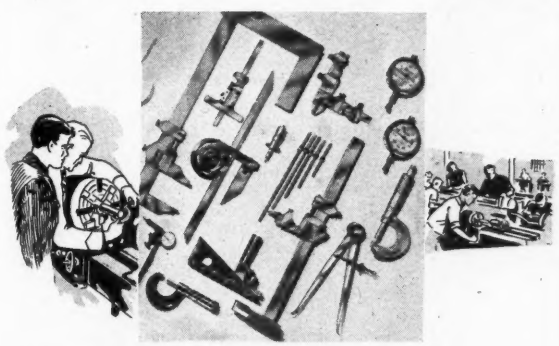

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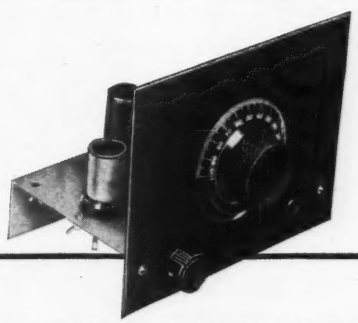

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A Cross-Striped Bowl

BY *Stan Schirmacher*
CLEMENCEAU JUNIOR HIGH SCHOOL, COTTONWOOD, ARIZONA

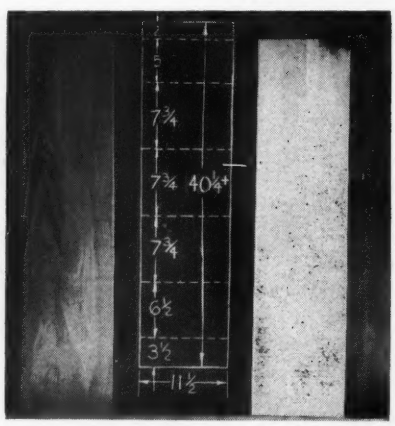
TESTED INSTRUCTIONAL PROJECT

THE woodturning lathe in the high-school woodshop usually develops a call for attractive nut bowl "creations" and a need for novel "glue-ups." To kill the proverbial two birds with one stone the cross-striped bowl illustrated here was planned to present a simple method of gluing up but two colors of hardwood stock and yet have a new design, a project with a puzzle problem presented to the person admiring the finished product.

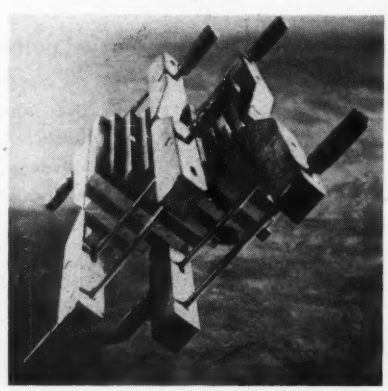
The steps involved in making the criss-cross layers of dark and light stripes are shown in the selfexplanatory photos. (The woods used in this case were walnut and birch.) Each board is cut into pieces the sizes of which are shown in the blackboard illustration and glued together. Then the block is squared up for ripping into layers of board thickness. Alternate pieces are then turned over for the final gluing into its criss-cross pattern. After turning. the bowl can be finished by French polishing or applying lacquer and rubbing. The bottom is then "flocked" or a piece of felt can be glued in place.

The complete bowl with lacquer polish.

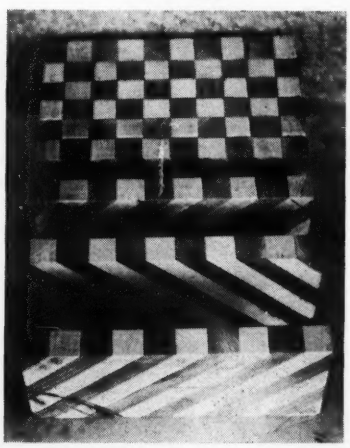
Layout for pieces. Dark and light hardwood.



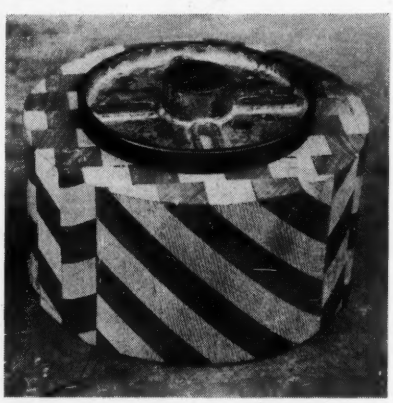
First gluing.



Squared up, ripped, and alternated. Ready for last gluing.



Band sawed and mounted on faceplate ready for turning.



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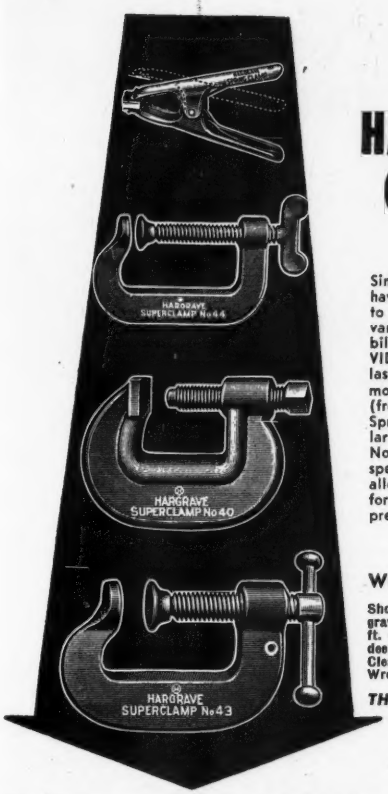

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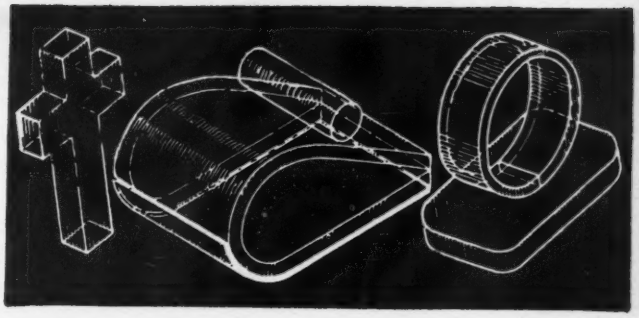

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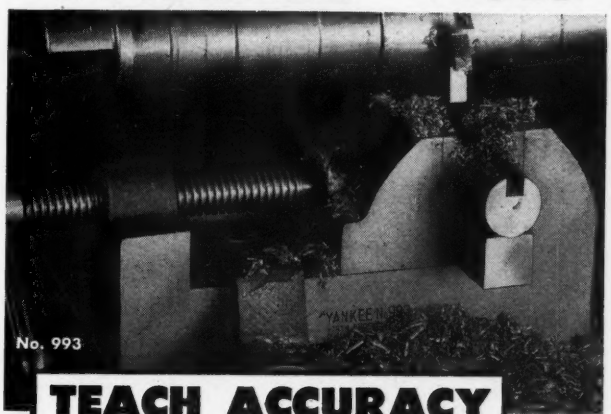

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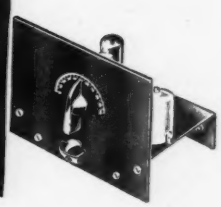

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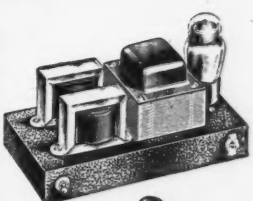

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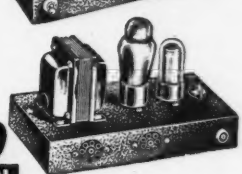

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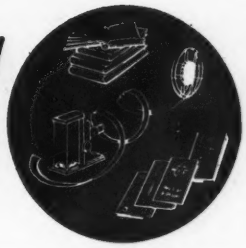

Automobile Maintenance. Kuns and Plumridge. Chicago: American Technical Society, 1946. Pp. 735. $4.75.

This volume in the automotive series by the American Technical Society contains chapters on service-station operation, motor analysis, and truck maintenance. Automechanics teachers will find particularly useful the wiring diagrams and data sheets on all popular makes of cars through 1942 models. The chapter on motor analysis is particularly well done as it treats the subject very comprehensively. The operation of test equipment is described in detail as well as the maintenance and basic construction of the equipment itself.

Ray F. Kuns is principal of the Automotive Vocational High School, Cincinnati, Ohio, and Tom C. Plumridge is head of the automobile engineering department, American School.

Understanding Microwaves. Young. New York: John F. Rider, Inc., 1946. Pp. xi + 385. $6.00.

Designed to present material which is basic to understanding microwave radio and radar, this volume is excellent for opening up new fields for those whose experience has been at the lower frequencies. Beginning with a chapter on the ultra-high frequency concept, the author develops the subject through such topics as magnetostatics, transmission lines, waveguides, resonant cavities, antennas, microwave oscillators, and finally radar. A second section of the book deals with microwave terms, ideas, and theorems in alphabetical style. This latter section will prove valuable for reference purposes. Mathematical explanations are kept at a minimum by relegating most of them to footnotes and including only those considered essential. There is a chapter, however, on Poynting's vector and Maxwell's equations.

Victor J. Young is senior project engineer for the Sperry Gyroscope Co.

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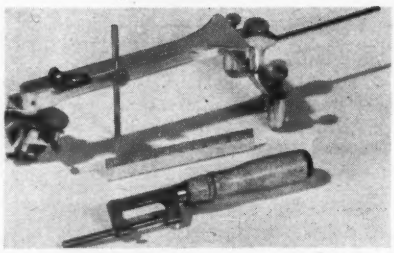

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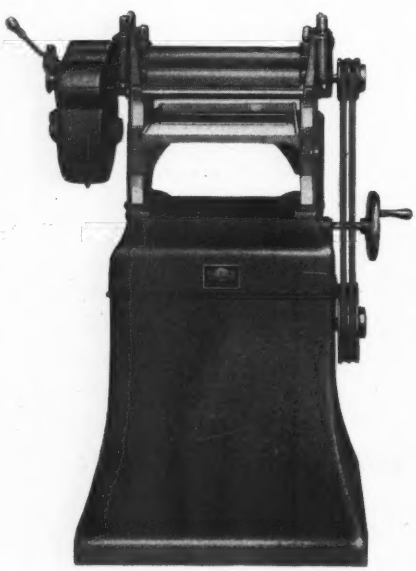

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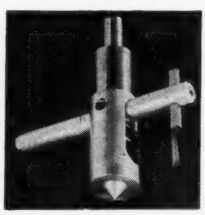

Correction

In listing No. 40 of our October, 1946, Shop Teachers Service, the line, "for grades one to six" was inadvertently omitted from the description of *Your Craft Book*, Newkirk and Sutter, International Textbook Co., Scranton 9, Pa. The book was written primarily for use by elementary school teachers. There are 108 projects, 20 appearing in color.

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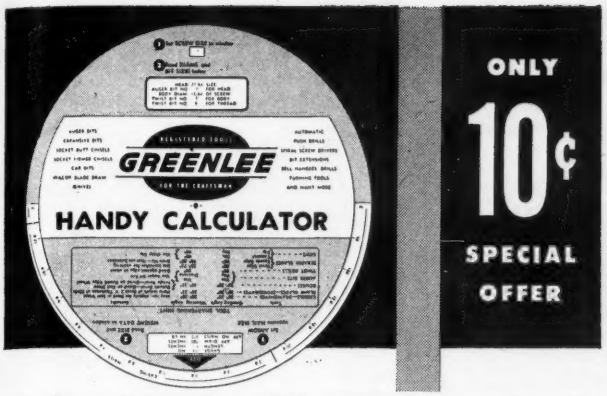

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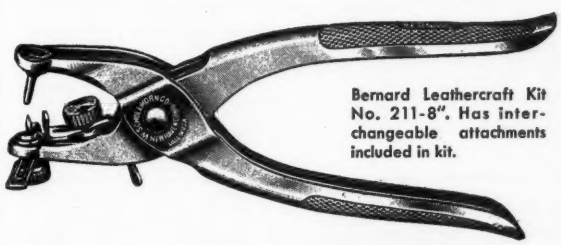

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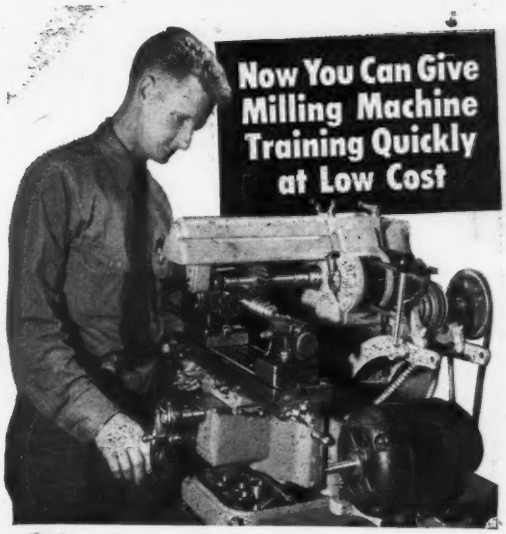

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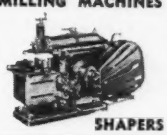

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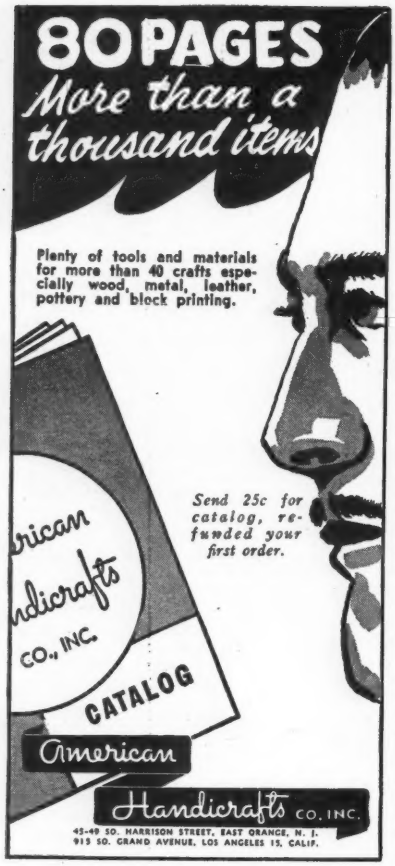

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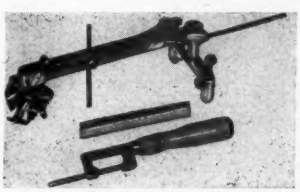

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IF ever there was a conflict between those who work in vocational education and those who work for the general education of youth, that conflict may soon come to an end. The chief state school officers of the nation will hear at their coming meeting in St. Louis a statement which will declare flatly that there must be a close working relationship between those who train youth for jobs and those who educate youth for the broader business of living richly and creatively.

The statement was drawn up by a committee headed jointly by Cameron M. Ross, state director of administration and finance, State Department of Public Instruction, Iowa, and T. J. Berning, assistant commissioner of education, State Department of Education, Minnesota. Working with them were members of the Office of Education and the National Council of Chief State School Officers. Their thinking resulted in a policy statement which up to now few had dared to formulate on the national level.

Despite the insistence in some quarters that everything is lovely between general and vocational education, the statement recognizes that there are two die-hard groups in American school systems. On the one hand there are those who teach and offer cultural and general courses without any concern for the youths' need for making a living—that is, it is education entirely without reference to work or a job. On the other hand, there are many vocational trade and industrial educators who are so preoccupied with developing vocational skills that nothing else in the world seems to matter—that is, it is education concerned only with a job.

Between these two extremes, says the policy statement which the chief state school officers will discuss this month, are many areas of common concern to both vocational and general education. "Close coordination of vocational and general education is essential."

Definite and certain are the elements of training for jobs. But what is general education? The committee says it is the sum total of our common heritage. It should include knowledge and skills for civic, personal, and social development. Its concern is to develop citizens who know what to do with their lives once they learn how to earn a living. And while on the subject of general education, the committee stressed that federal aid must be forthcoming for general education in the same measure that it is now available for vocational education.

In all probability the statement will be adopted by the chief state school officers. And once that happens, the committee says that it will be up to schoolmen on all levels—local, state, and federal—to carry out its spirit and intent—by setting up for all American youth well-balanced programs of general and vocational education.

▸▸ Statisticians who watch the national figures on vocational education enrolments note that for the first time since 1942 the curve is going upward. During the war years, the number of pupils in federal-aided vocational classes had dropped to just about 2,000,000 from the all-time peak of 2,625,000. This was due to the fact that many trainees were drawn off from the regular courses to go to war or to war-training programs. Now the enrolment curve has risen to 2,197,000 and statisticians predict it will continue to go even higher in 1947.

▸▸ When the new policy manual governing the use of federal funds for vocational training is released, no one will be able to say that it has been cooked up in Washington without regard to the needs and opinions of the state officials. Your reporter can say flatly that rarely has any Washington policy statement been subject to so many reactions and suggestions from state officials. In fact, the new manual, which should be ready sometime before Christmas, can properly be said to have been fashioned almost wholly "in the field," the bureaucrat's term for the state and local communities.

In all, the policy manual was the subject of 11 field conferences which took place in cities all over the country over a period of nearly six months. The state point of view was sought eagerly by Raymond Gregory who, as the assistant commissioner for vocational education, has no cloistered mind and wants no "ivory-tower" documents to come out of Washington.

For that reason the new policy manual will be a more pleasant document to live and work with. One example: the manual will no longer require state officials to match state dollars for exactly the same items for which the federal dollar is spent. Instead, it will be possible to match federal and state funds for the same general purposes—that is, for promoting either trade and industrial, vocational agriculture, or other of the George-Barden programs.

▸▸ Teaching may be somewhat more profitable in the months to come and may even regain some of the public esteem to which it is entitled if the present popular support for the profession continues. The school shop teacher to-

(*Continued on page* 10)

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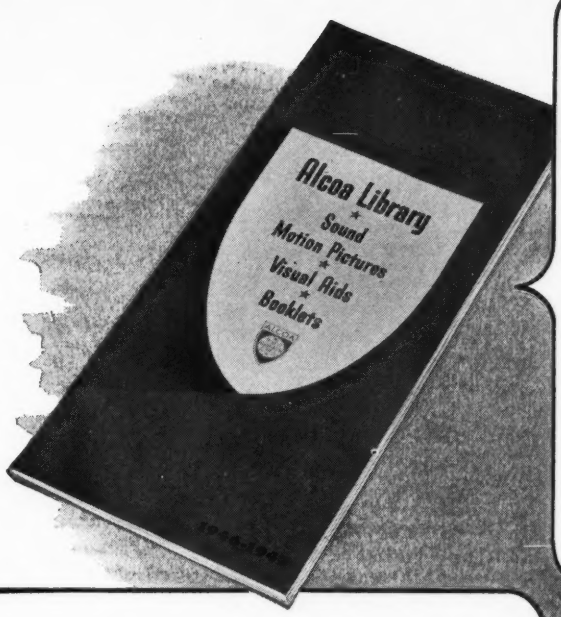

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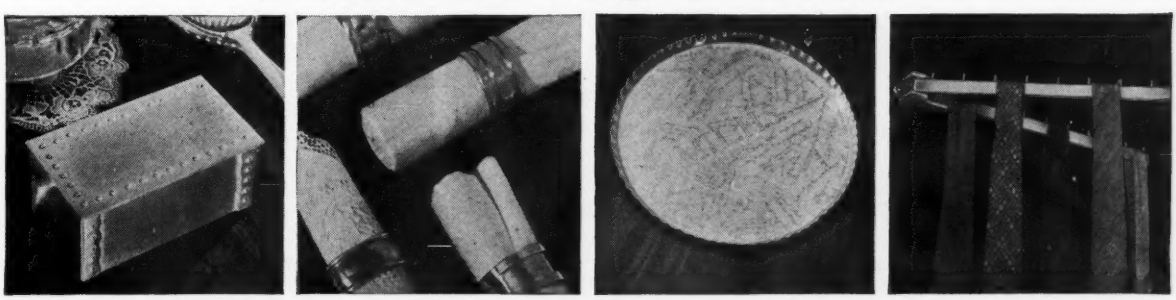

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